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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/822,326	04/12/2004	Chen Zhang	WJT08-0068 (JSF001-0041)	3121
7590	01/28/2005		EXAMINER BARRECA, NICOLE M	
James S. Finn 8650 Southwestern Blvd. #2825 Dallas, TX 75206-2688			ART UNIT 1756	PAPER NUMBER

DATE MAILED: 01/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/822,326

Applicant(s)

ZHANG ET AL.

Examiner

Nicole M Barreca

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 10-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-25 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/12/04</u> . | 6) <input type="checkbox"/> Other: ____.  |

**DETAILED ACTION**

***Election/Restrictions***

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-9, drawn to a method for fabricating a tunable dielectric slurry, classified in class 430, subclass 317.
  - II. Claims 10-17, drawn to a method for manufacturing a photodefinable tunable dielectric, classified in class 430, subclass 322.
  - III. Claims 18-25, drawn to a varactor, classified in class 333, subclass 164.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions are not disclosed as capable of use together and have different modes of operation. See [0040] of applicant's specification. In invention I, a thick film tunable dielectric is coated using screen printing, spin coating, transfer coating tape casting or dip coating, exposed to UV radiation, dried, baked, developed and sintered. In invention II, a photodefinable tunable dielectric slurry is prepared by stirring and hand or mill mixing and spin coated, followed by soft baking, exposure, development, rinsing, drying and firing.
3. Inventions I and III are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2)

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that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by another an materially different process, such as using laser ablation, etching or selective deposition in order to form a pattern in the tunable dielectric layer.

4. Inventions II and III are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by another an materially different process, such as using laser ablation, etching or selective deposition in order to form a pattern in the tunable dielectric layer.

5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

6. During a telephone conversation with James Finn on 1/25/05 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-9. Affirmation of this election must be made by applicant in replying to this Office action. Claims 10-25 withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

7. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim

remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

***Claim Objections***

8. Claims 4 and 5 are objected to because of the following informalities: in claim 4 “substrate” is spelled incorrectly. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claim 9 contains the trademark/trade name Parascan. Where a trademark or trade name is used in a claim as a limitation to identify or describe a particular material or product, the claim does not comply with the requirements of 35 U.S.C. 112, second paragraph. See *Ex parte Simpson*, 218 USPQ 1020 (Bd. App. 1982). The claim scope is uncertain since the trademark or trade name cannot be used properly to identify any particular material or product. A trademark or trade name is used to identify a source of goods, and not the goods themselves. Thus, a trademark or trade name does not identify or describe the goods associated with the trademark or trade name. In the present case, the trademark/trade name is used to identify/describe the tunable dielectric and, accordingly, the identification/description is indefinite.

***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1, 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cummings (US 4,336,320) in view of Bratschun (US 3,996,502).

13. Cummings discloses a method for making high density interconnection circuitry for multilayered hybrid micropackages. Dielectric thick film paste 21 is formed on ceramic substrate 20 and dried. Photoresist layer 22 is deposited and dried. These two steps may be combined into a single step if the dielectric paste includes a photosensitive constituent (see cl.7). The photosensitive material is then exposed to UV light through a photomask 23. Following exposure the substrate is treated with a developer which simultaneously removes or etches both the photoresist and the dielectric. Dielectric 21 is then fired (sintered) at a temperature of about 800-1000 °C (see col.1, 43-col.2, 21 and claims). Cummings is silent on the exact composition of the dielectric and does not explicitly disclose that the dielectric thick film is tunable. The reference however does teach that the method is used to manufacture high density interconnection circuitry for multilayered hybrid micropackages. Bratschun teaches that thick film hybrid circuits generally have ceramic substrates and passive elements such as resistors, conductors and capacitors and that ceramic capacitors are known to include a barium titanate based dielectric (i.e. tunable dielectric) (col.1, 1-37). It would have been obvious to one of ordinary skill in the art to expect that the thick film dielectric is a tunable dielectric in the method of making a thick film hybrid micropackage in the method of Cummings because Bratschun teaches that thick film hybrid circuits generally have ceramic substrates and passive elements such as resistors, conductors and

capacitors and that ceramic capacitors are known to include a tunable dielectric such as a barium titanate based dielectric.

14. Claim 1 is rejected under 35 U.S.C. 103(a) as being obvious over Zhang (US 2004/0227228).

The applied reference has common inventors with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(I)(1) and § 706.02(I)(2).

A thick film tunable dielectric is overcoated with a thin film metal and a photoresist. The substrate is soft baked, exposed and post-exposure baked, followed

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by development. See [0022] and cl.12-19. Zhang does not disclose a sintering step. However it is known in the art that thick film dielectrics must be sintered in order to complete the manufacture the dielectric chip. It would have been obvious to one of ordinary skill in the art to sinter the thick film dielectric in the method of Zhang because it is known in the art that this is a required step in the manufacture of dielectric chips.

15. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cummings in view of Bratschun or Zhang as applied to claim 1 above, and further in view of Geist (US 4,772,377).

16. The references are silent on the method used to deposit the thick film dielectric and does not disclose that the thick film is screened printed and thixotropic. Geist teaches screen printing is used in the fabrication of thick film microelectronics such as hybrids and is an established techniques for the deposition of thixotropic electronic materials (col.2, 54-68). It would have been obvious to one of ordinary skill in the art to deposit the thixotropic thick film dielectric by screen printing in the method of Cummings in view of Bratschun or the method of Zhang because Geist teaches screen printing is used in the fabrication of thick film microelectronics such as hybrids and is an established techniques for the deposition of thixotropic electronic materials.

17. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cummings in view of Bratschun or Zhang as applied to claim 1 above, and further in view of Maruta (US 5,686,525).

18. The references are silent on the method used to deposit the thick film dielectric and does not disclose that the thick film is screened printed and thixotropic, or that the



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thick film is spin coated and Newtonian. Maruta teaches in the background that it is known that when screen printing is the method of deposition the coating material is desired to have a thixotropic property, while the coating material is desired to be in the form of a Newtonian fluid when the spin coating technique is employed (col.1, 33-41). It would have been obvious to one of ordinary skill in the art to deposit the thixotropic dielectric by screen printing, or to deposit the Newtonian dielectric by spin coating in the method of Cummings in view of Bratschun or the method of Zhang because Maruta teaches in the background that it is known that when screen printing is the method of deposition the coating material is desired to have a thixotropic property, while the coating material is desired to be in the form of a Newtonian fluid when the spin coating technique is employed.

19. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cummings in view of Bratschun or Zhang as applied to claim 1 above, and further in view of Mueller (US 6,097,263).

20. The references are silent on the method used to deposit the thick film dielectric and does not disclose that the thick film is deposited using transfer coating, tape casting or dip coating. Mueller teaches that thick dielectric is typically deposited by tape casting (col.3, 26-29). It would have been obvious to one of ordinary skill in the art to deposit the thick film dielectric by tape casting in the method of Cummings in view of Bratschun or the method of Zhang because Mueller teaches that thick dielectric is typically deposited by tape casting.

***Double Patenting***

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21. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

22. Claim 1 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 12 of copending Application No. 10/760,875. Although the conflicting claims are not identical, they are not patentably distinct from each other because both claim the steps of photo patterning a thick film tunable dielectric. While Zhang does not claim sintering the substrate, it is known in the art that sintering is a required step in the manufacture of dielectric chips using thick film dielectric slurries.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

### **Conclusion**

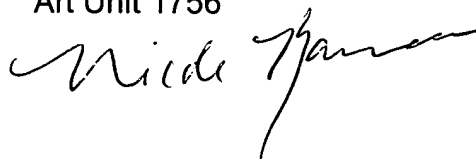
23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nicole M Barreca whose telephone number is 571-272-1379. The examiner can normally be reached on Monday-Thursday (9AM-7PM).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nicole M Barreca  
Examiner  
Art Unit 1756



1/26/05